

US experience with *C. auris* response and containment

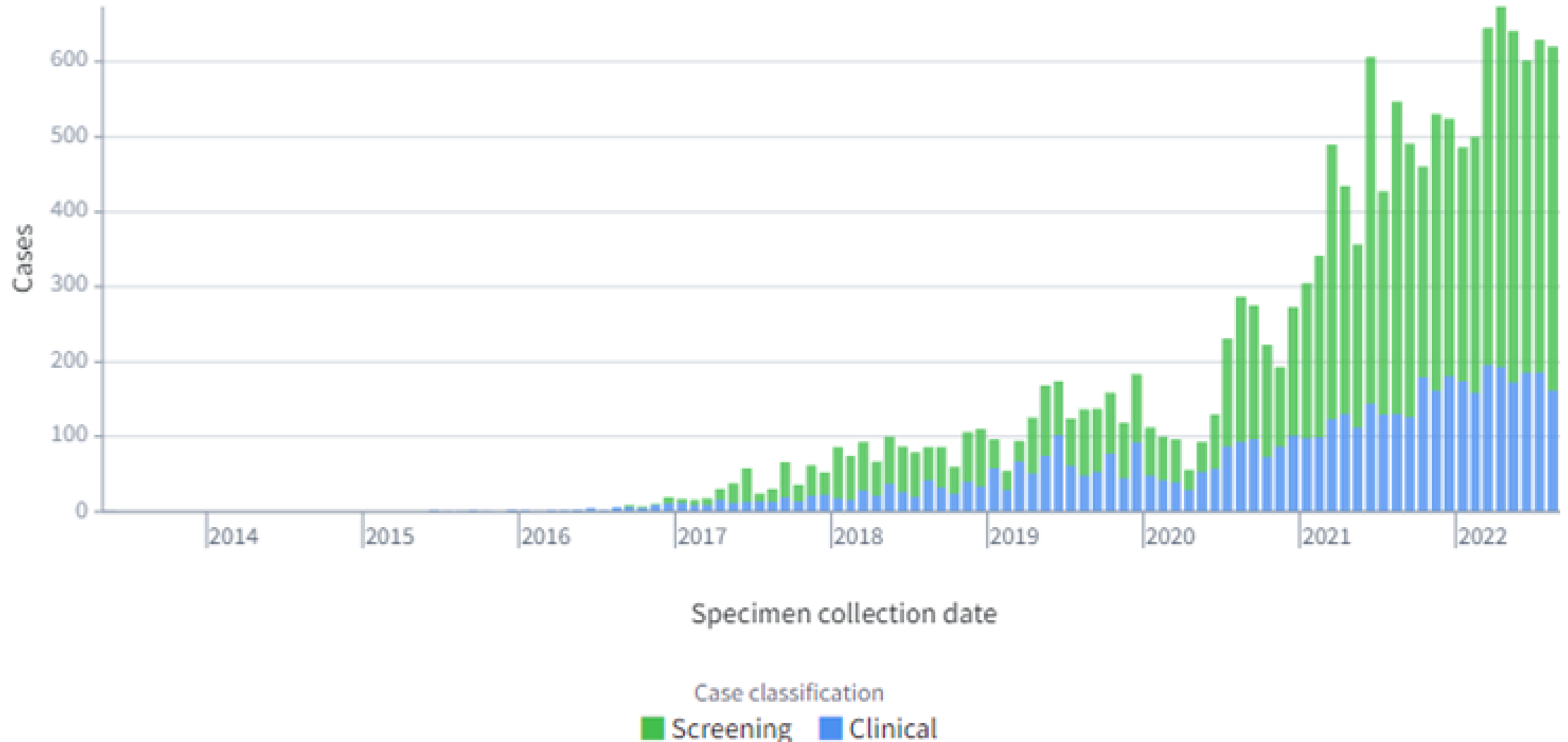
Meghan Lyman, MD

CDC Mycotic Diseases Branch

May 2023



C. auris cases in the United States by month



Geographic spread of *C. auris* in the U.S. over time

2013-2016
(4 new states)



2017
(6 new states)



2018
(2 new states)



2019
(6 new states)



2020
(8 new states)

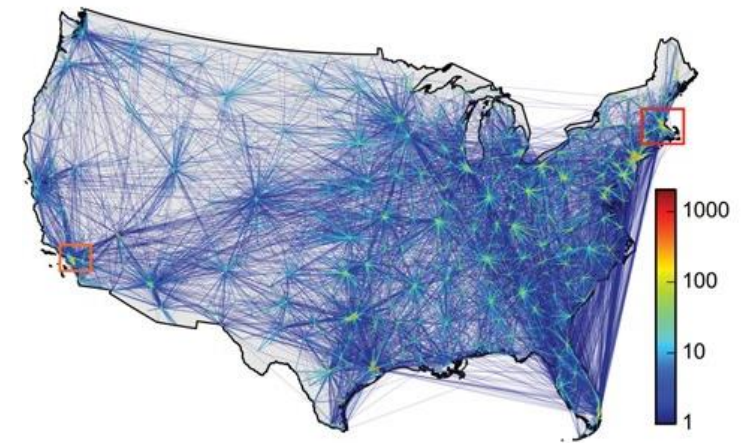
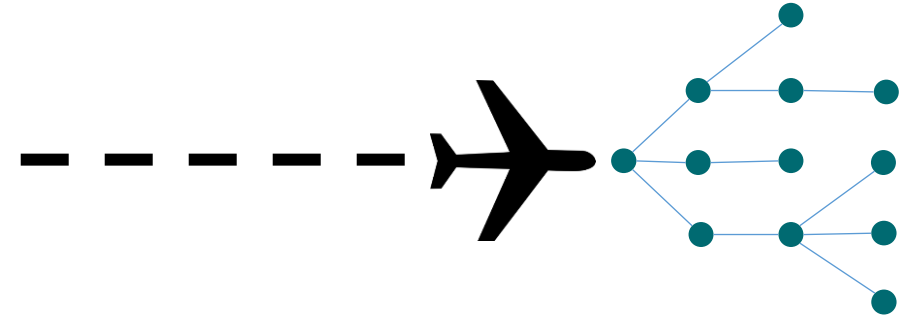


2021
(3 new states)



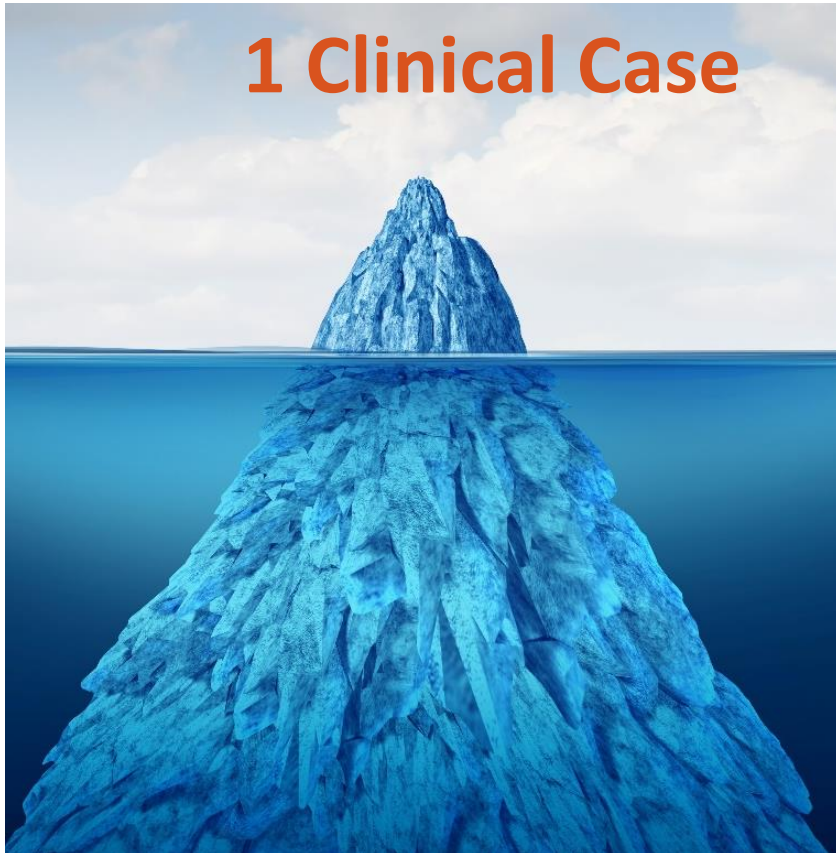
C. auris no longer just introduced from abroad

- Initially, cases were introduced from abroad
- But now, most cases are the result of local transmission
- Domestic travel-related cases from high burden areas in the U.S. are more common
- First case detected in an area is often not the first case...transmission has already occurred



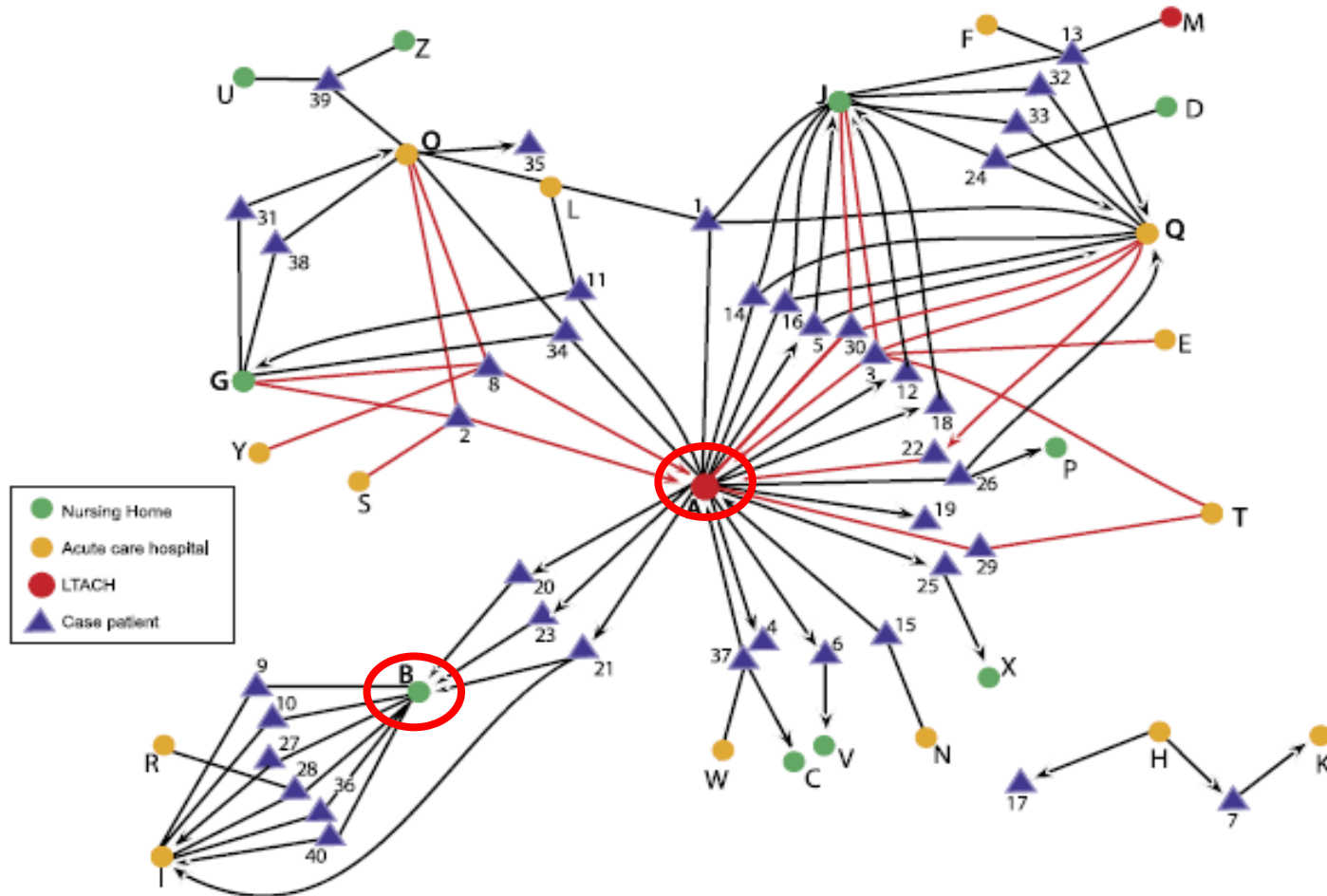
U.S. Facility transfer network
Fernandez-Garcia et al. Nature (2017)

How big is the *C. auris* problem?



- Detected first introduction and strong IPC, so no transmission
- Detected case early and screening detects a few cases at a single facility (suggesting limited transmission)
- Detected case late and screening detects many cases at multiple facilities (suggesting broad, regional transmission)

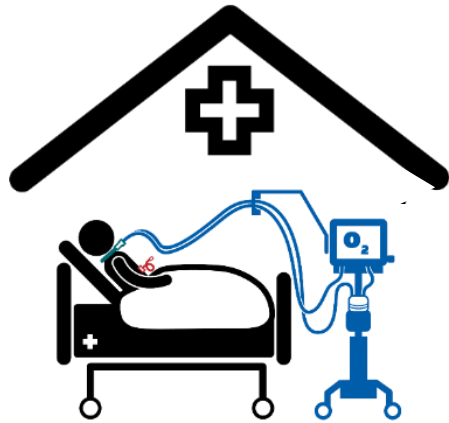
Spread is amplified in high acuity post-acute care facilities (similar to other MDROs)



- LTACHs and vent-capable SNFs:
- Long lengths of stay
 - High acuity patients
 - Less infection control infrastructure than short stay acute care hospitals

vSNFs and LTACHs are disproportionately affected

C. auris prevalence



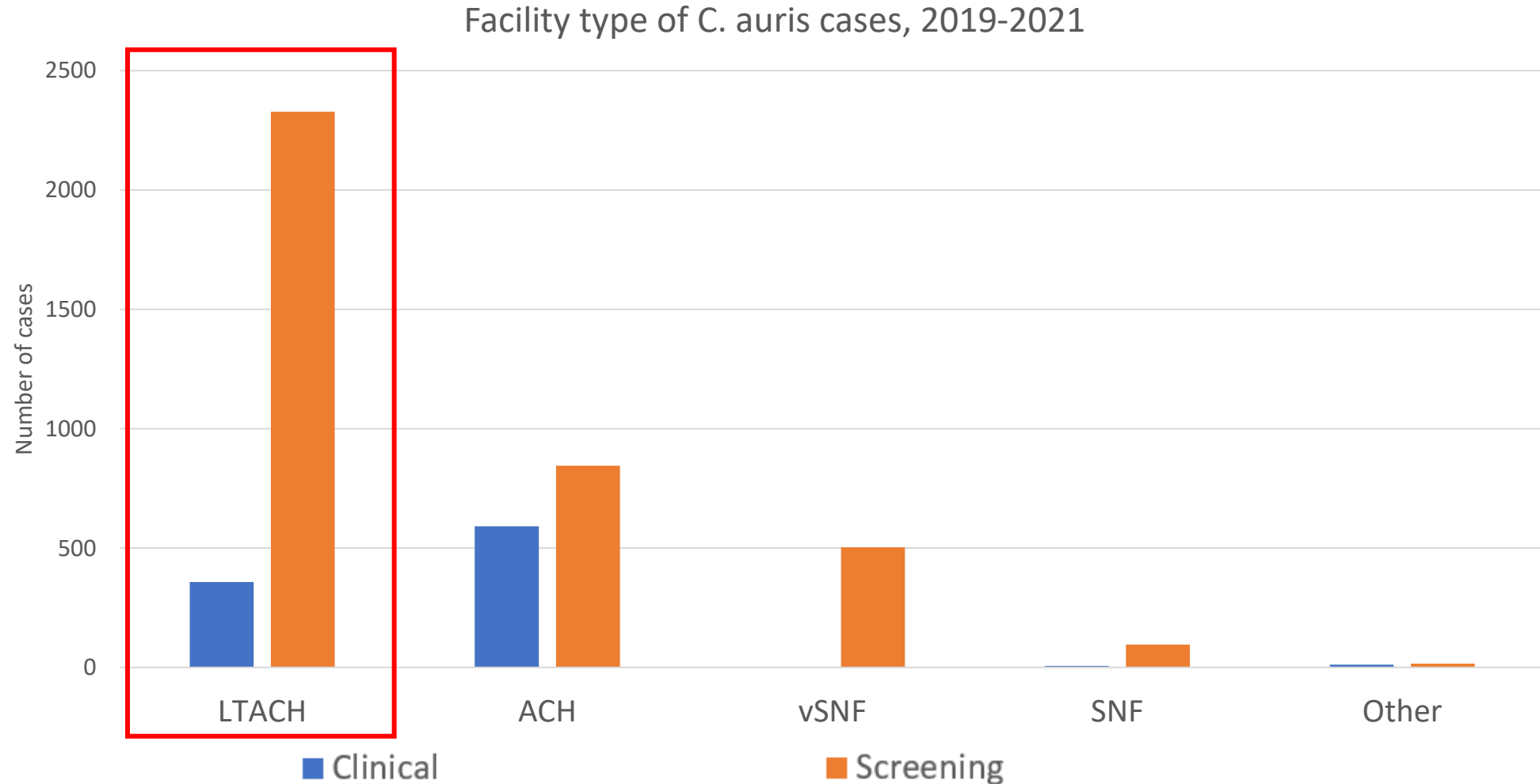
in vSNFs: 23-71%
in LTACHs: 23-36%

C. auris prevalence

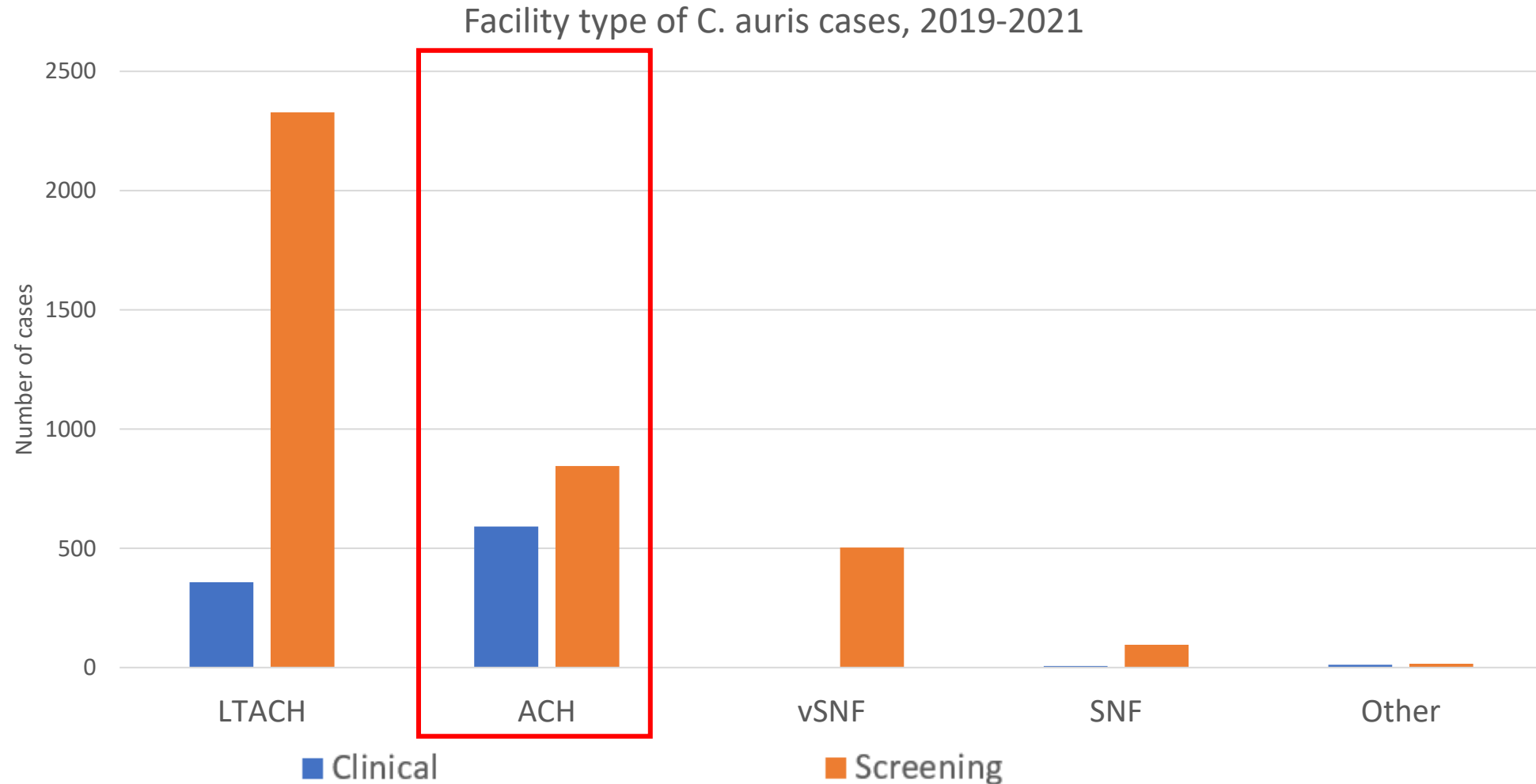


in SNFs: 0-2%
In ACHs: 0-14%

C. auris cases are most commonly identified at LTACHs



Clinical cases are most often identified at Acute Care Hospitals



Acute Care Hospitals play an important role too!

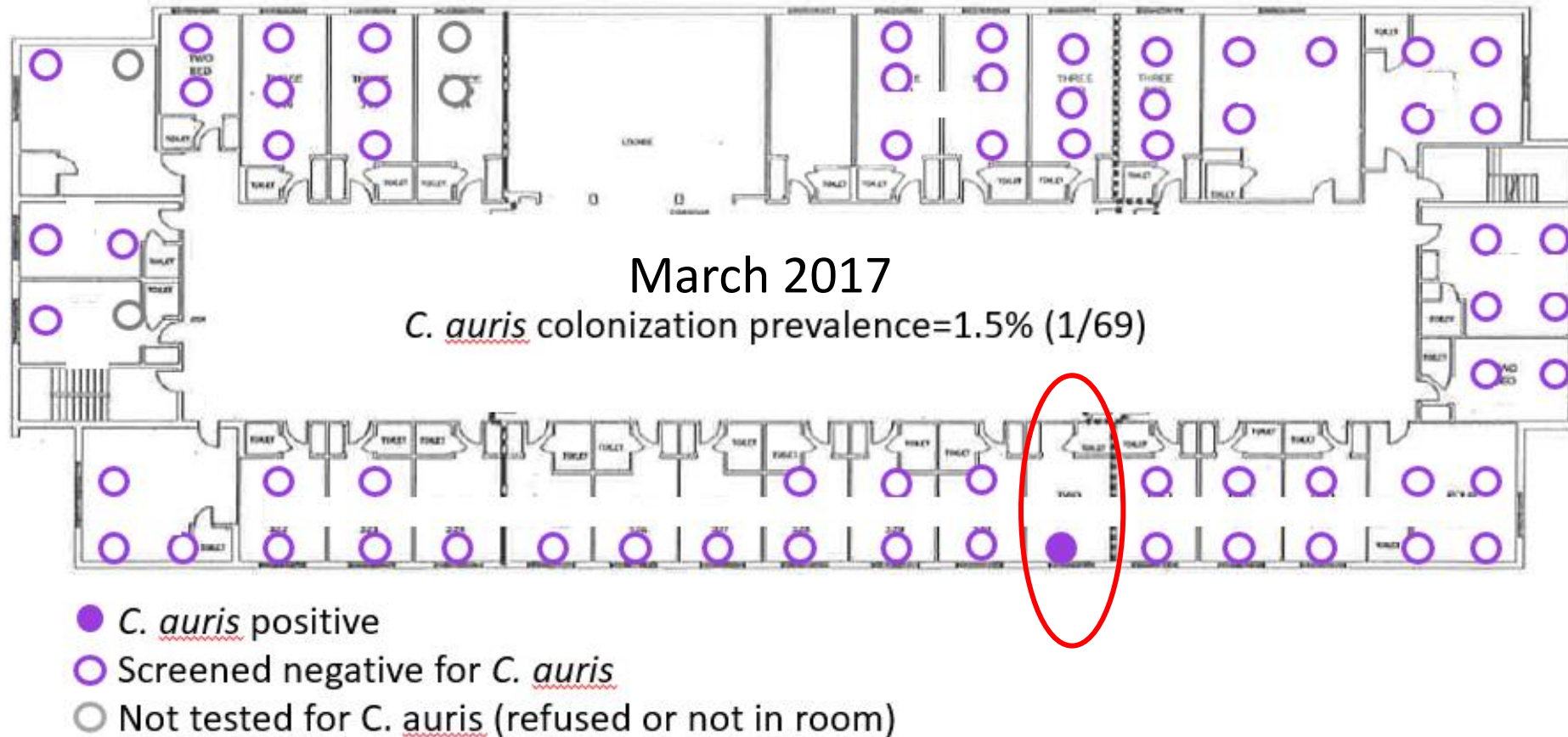
- Can still have transmission and outbreaks
- Can identify local cases and outbreaks that might be missed
- Role model for infection control

Morbidity and Mortality Weekly Report

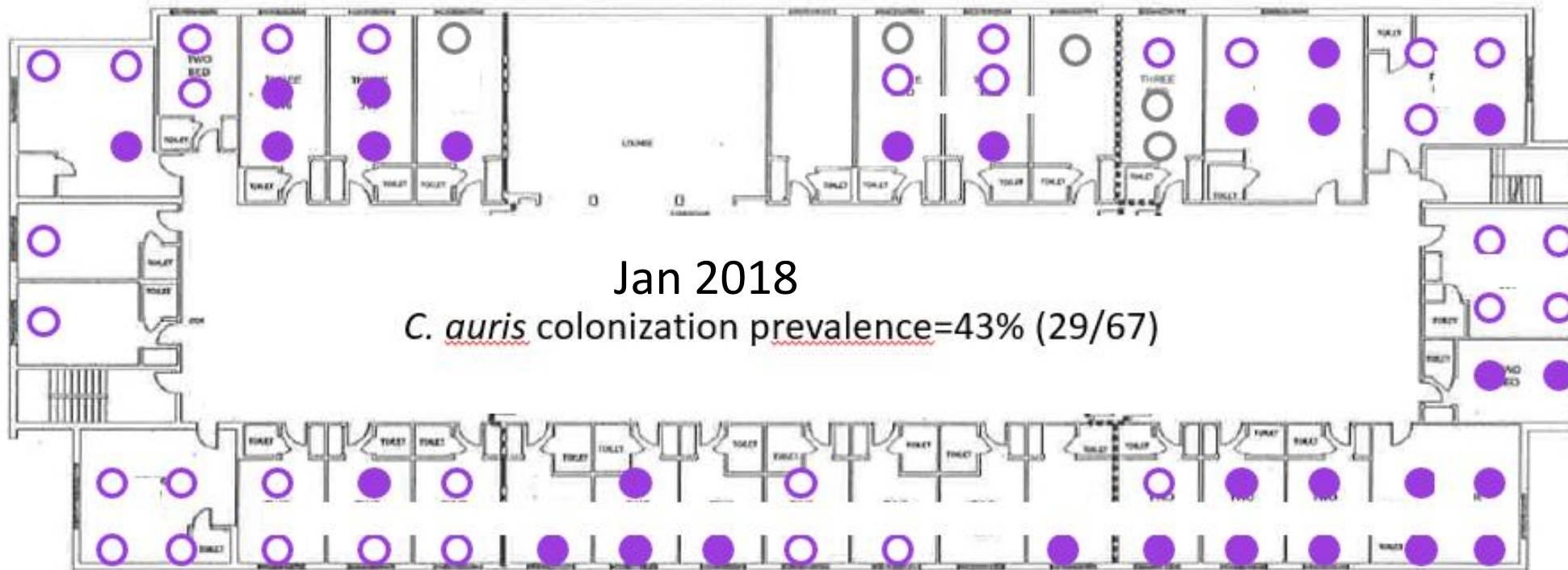
Candida auris Outbreak in a COVID-19 Specialty Care Unit — Florida, July–August 2020

Christopher Prestel, MD^{1,2}; Erica Anderson, MPH²; Kaitlin Forsberg, MPH³; Meghan Lyman, MD³; Marie A. de Perio, MD^{4,5}; David Kuhar, MD¹; Kendra Edwards⁶; Maria Rivera, MPH²; Alicia Shugart, MA¹; Maroya Walters, PhD¹; Nychie Q. Dotson, PhD²

C. auris spreads throughout units and facilities, not just to roommates

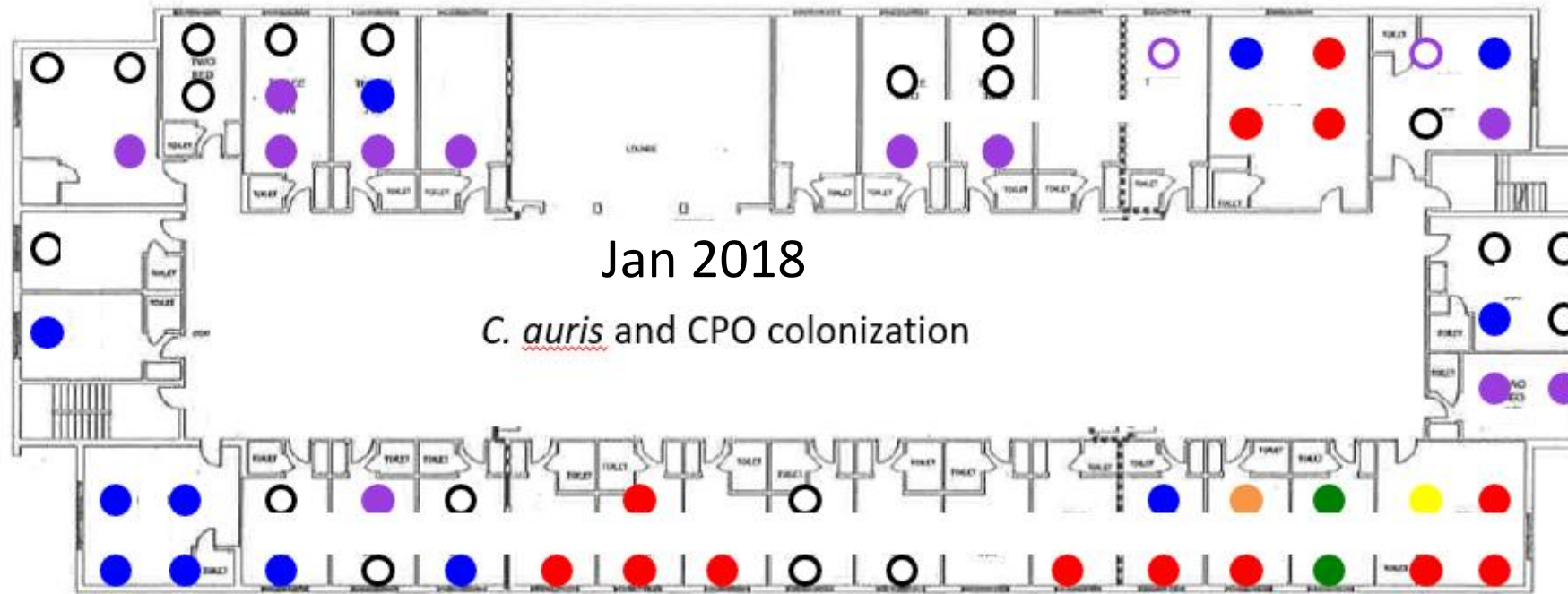


C. auris spreads throughout units and facilities, not just to roommates



- *C. auris* positive
- Screened negative for *C. auris*
- Not tested for *C. auris* (refused or not in room)

Many patients have other MDROs too



- *C. auris*
- *C. auris* and KPC
- KPC or CRE with unknown mechanism of resistance
- *C. auris*, KPC, and NDM
- *C. auris*, VIM-CRPA, and KPC
- *C. auris* and KPC-CRPA
- Screened negative for *C. auris*, but not tested for CRE
- Screened negative for CRE and *C. auris*

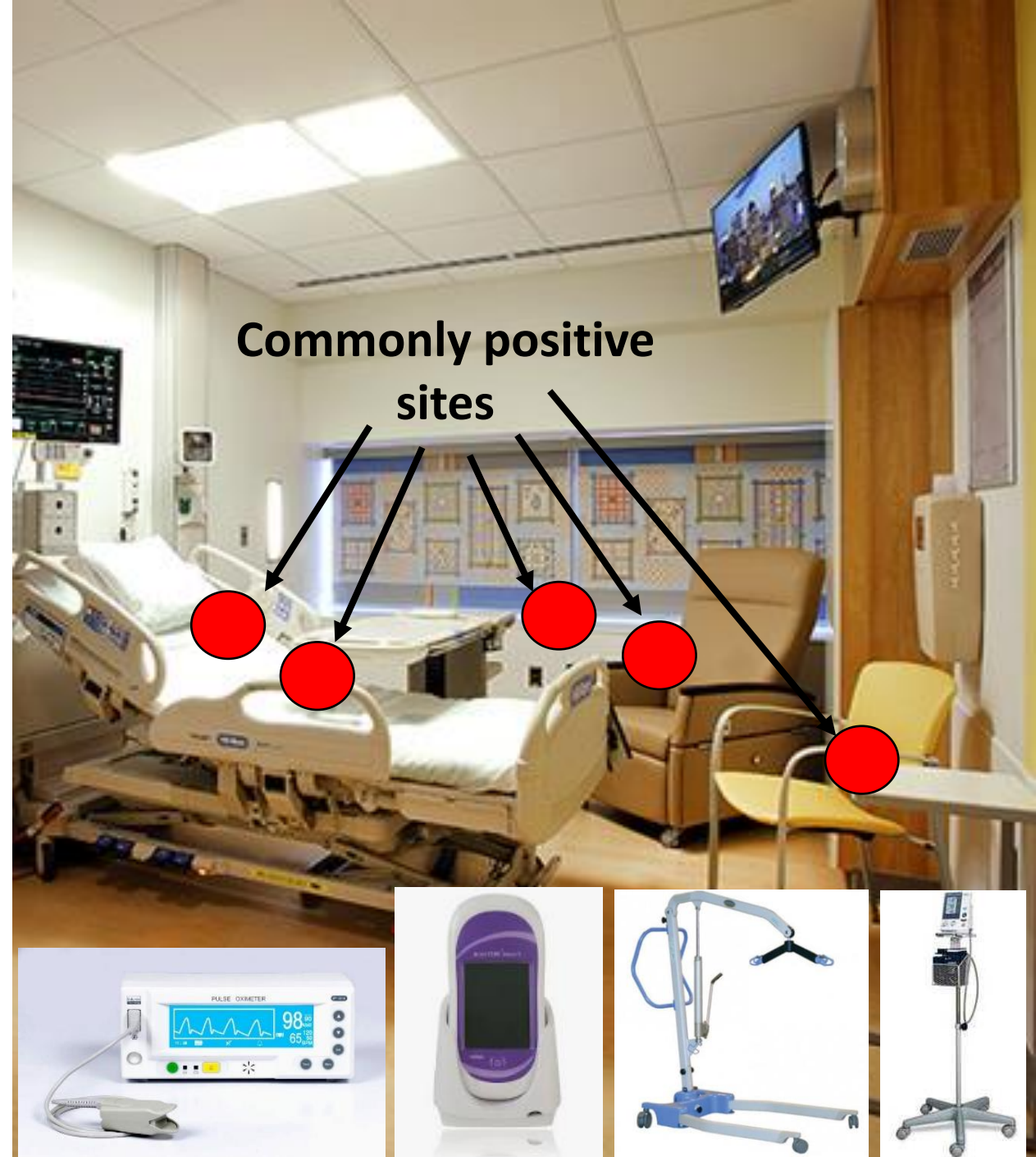
vSNF = skilled nursing facility with ventilator units

CPO = carbapenemase-producing organism; PPS = point-prevalence survey

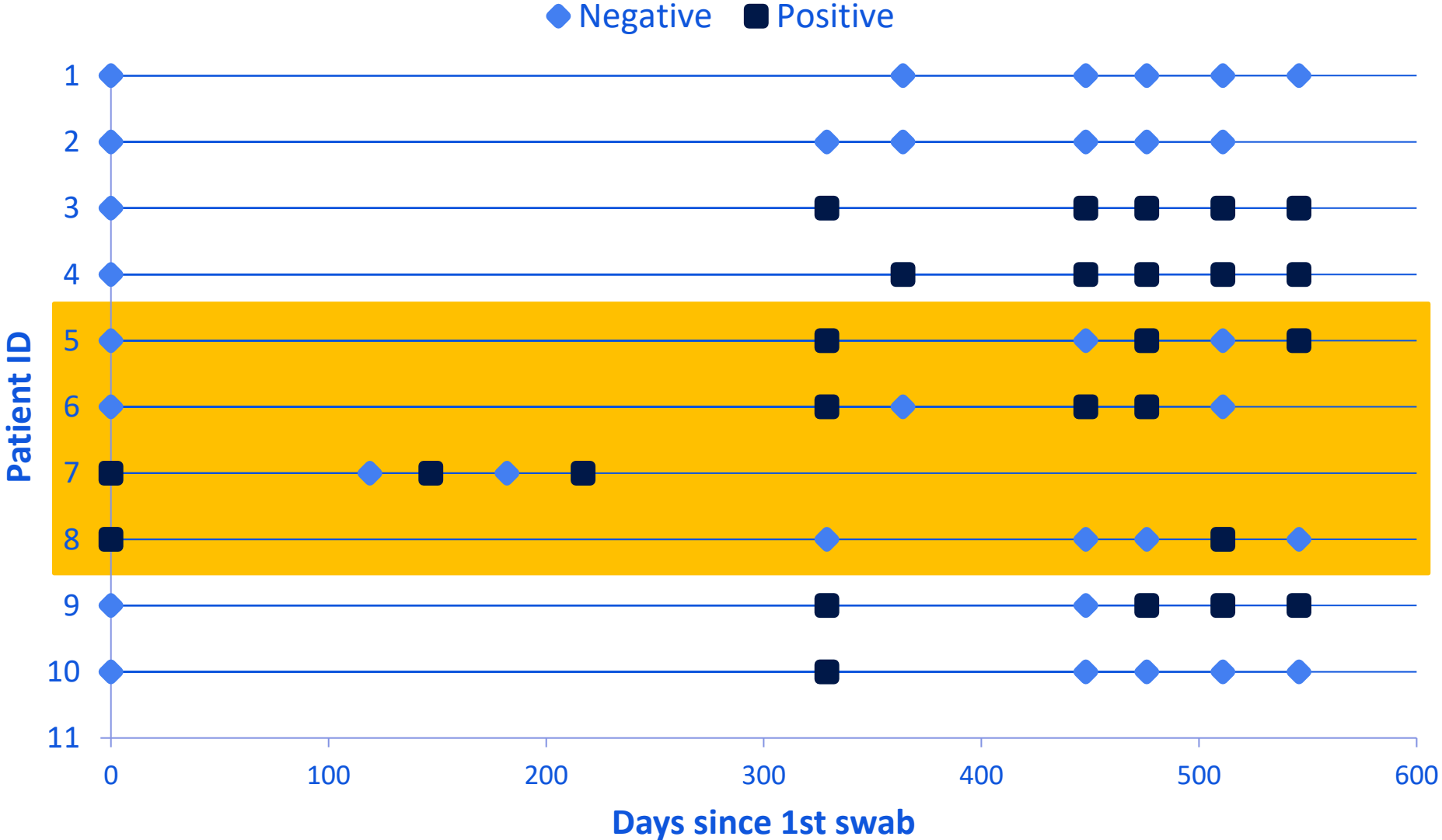
Slide courtesy of Chicago Department of Public Health.

C. auris persists in the environment

- Contaminates surfaces and medical equipment
 - Including shared medical equipment
- Environmental contamination proportional to skin burden
- Environmental sampling not recommended because...
 - Positives expected in immediate environment of cases
 - Negatives don't confirm that *C. auris* is completely absent
 - Resource intensive
 - Recommend assessing cleaning using other methods



Patients remain colonized for a long time, perhaps indefinitely



C. auris colonization

- Recommend swabbing axilla/groin, but colonizes other body sites too (nares, palms/finger, toe webs)
- No currently known decolonization strategies
- In vitro data shows CHG kills *C. auris* at high concentrations
 - but CHG often does not achieve these high levels on this skin
- Transmission/outbreaks occur often in facilities doing routine CHG bathing



Healthcare personnel

- Generally, considered low risk for infection and colonization
- There have been a few studies that have screened healthcare workers in outbreak settings and haven't found positives
 - including a study in Saudi Arabia where they screened >700 staff*



MDRO Containment and Prevention Guidance

Interim Guidance for a Public Health Response to **Contain** Novel or Targeted Multidrug-resistant Organisms (MDROs)



Public Health Strategies to **Prevent** the Spread of Novel and Targeted Multidrug-resistant Organisms (MDROs)

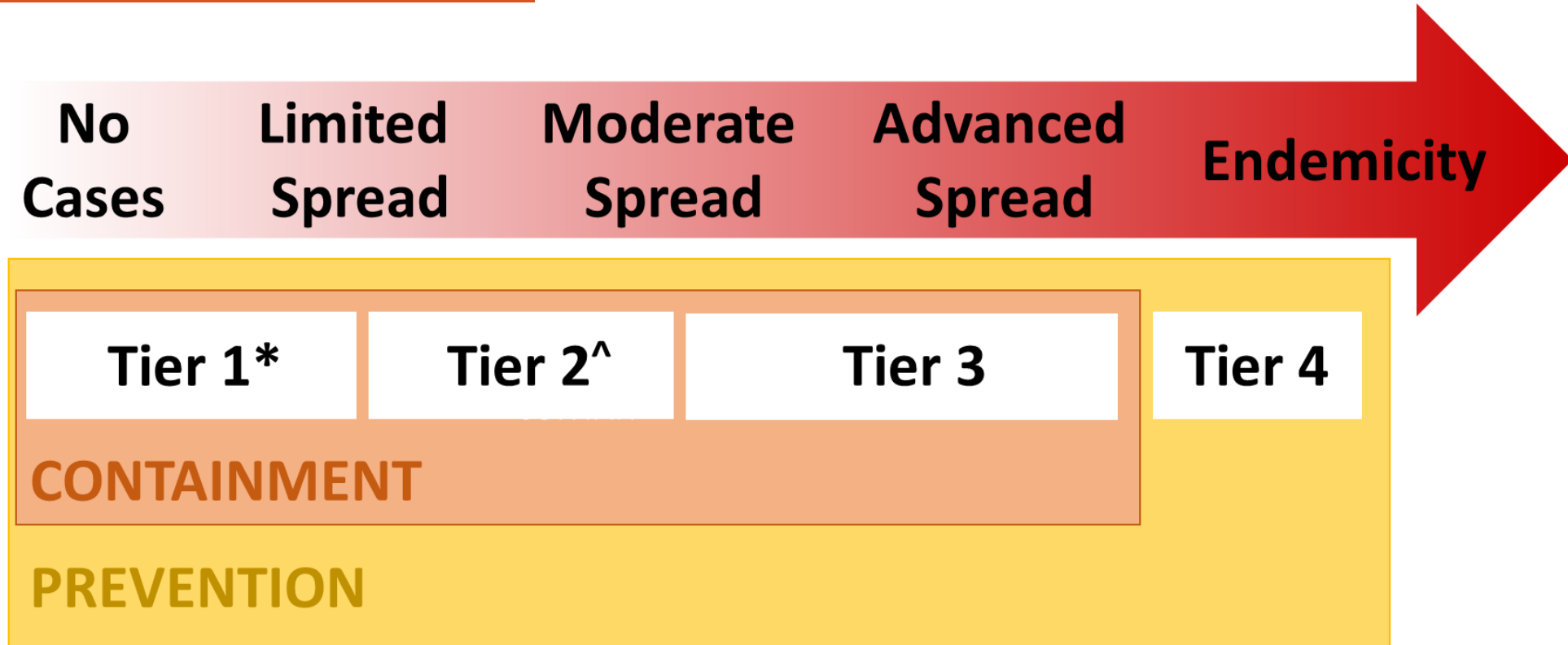
Accessible Link: <https://www.cdc.gov/hai/mdro-guides/prevention-strategy.html>



Prevention and response should be based on local epidemiology

<https://www.cdc.gov/hai/mdro-guides/index.html>

Prevention and containment should be based on local epidemiology



Organisms or resistance mechanisms that have

*Never (or very rarely) been identified **in the United States** and for which experience is extremely limited are Tier 1

^ Never (or very rarely) been identified **in a public health jurisdiction but are more common in other parts of the U.S.** are Tier 2.

Early detection of cases is important to prevent spread

■ Clinical specimens

- Laboratory ability to identify these organisms correctly
- Enhanced detection methods (e.g., identify the species of all *Candida* or yeast species from any specimen type)

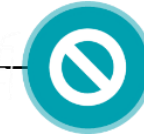
■ Colonization screening

- Healthcare contacts
- Point prevalence survey (PPS)
- Admission screening of high-risk patients
- Discharge screening for outbreak facilities

The type of screening and target population should be based on local epidemiology



C. auris Screening Strategies depend on local epidemiology



	Response (Containment)	Prevention
PPS	<ul style="list-style-type: none"> • Performed in response to a case to identify additional cases and scope of transmission • Repeated until transmission controlled (stopped or reduced) 	<ul style="list-style-type: none"> • Performed proactively at facility at high risk for transmission to identify new cases/transmission early
Admission Screening	<ul style="list-style-type: none"> • Performed with PPSs to understand amount of transmission vs introductions 	<ul style="list-style-type: none"> • Performed in low burden facility to identify introductions early
Discharge screening	<ul style="list-style-type: none"> • Performed for facility experiencing transmission/outbreak to prevent spread to other downstream facilities 	<ul style="list-style-type: none"> • Not usually performed

Rapid Assessment and Containment of *Candida auris* Transmission in Postacute Care Settings—Orange County, California, 2019

Ellora N. Karmarkar, MD, MSc; Kathleen O'Donnell, MPH; Christopher Prestel, MD; Kaitlin Forsberg, MPH;

LTACHs started determining the species of any yeast from urine

First urine specimen positive for *C. auris*

First blood specimen positive for *C. auris*



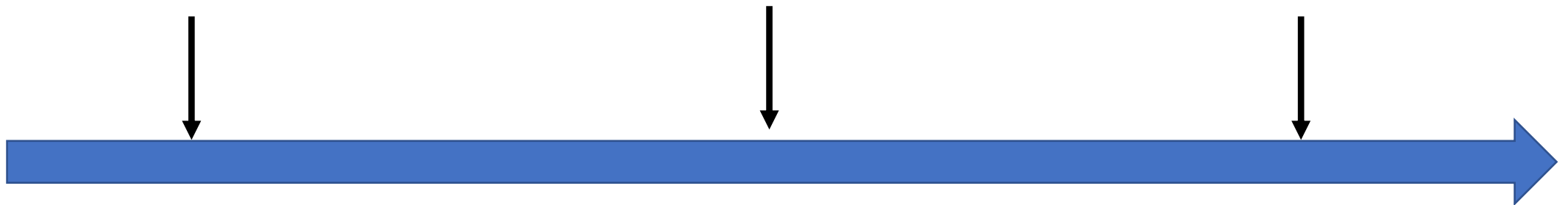
Prompted screening that identified >100 colonized cases at multiple LTACHs and vSNFs

Early prevention strategies at high-risk facilities limited spread

Public health in area with no cases worked proactively to improve detection through screening and infection control

First, local-acquired case in April 2021

Over the next 11 months, only 12 additional cases were identified



In comparison, another neighboring county that **did not** take proactive approach identified **170 cases** in the same timeframe (11-months).

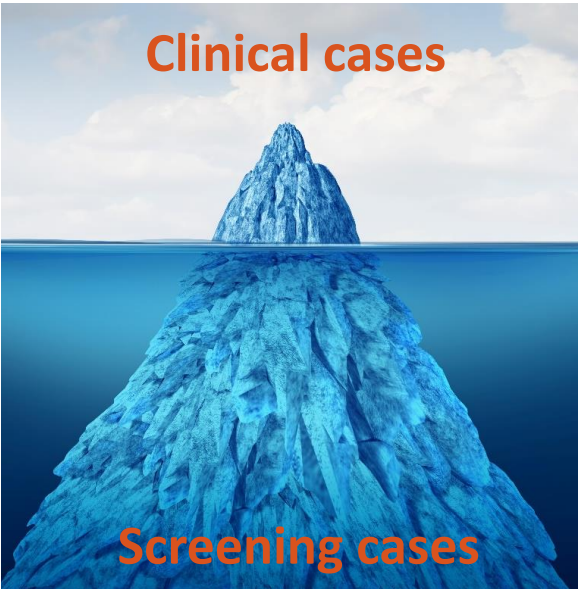
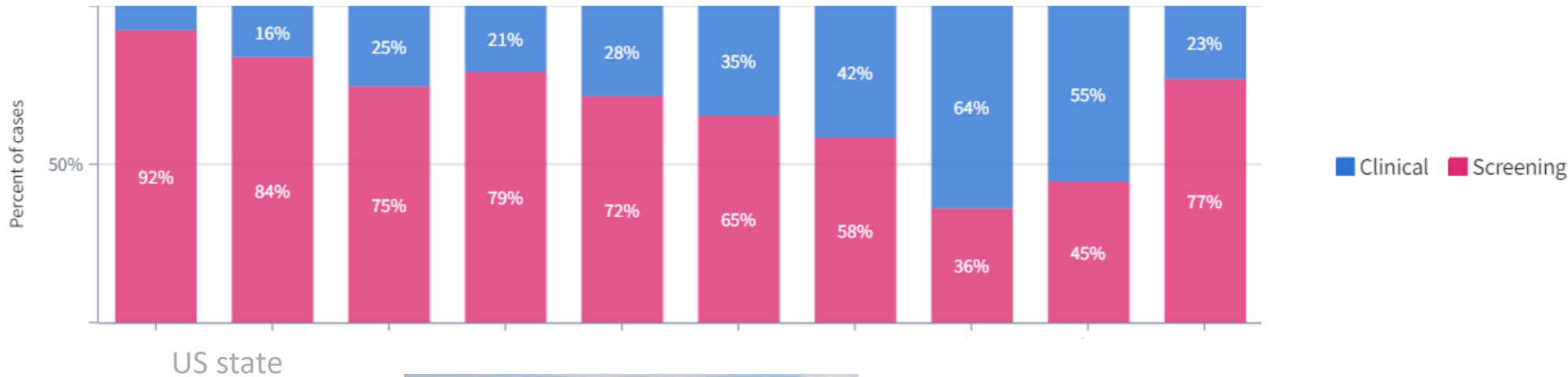
Early, proactive screening at high-risk facilities identified source of transmission

First case in one state had no history of travel or previous healthcare (suggesting transmission at the index hospital)

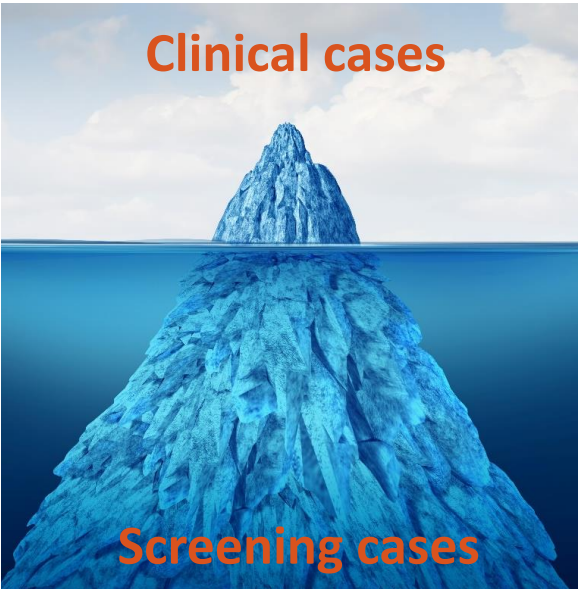
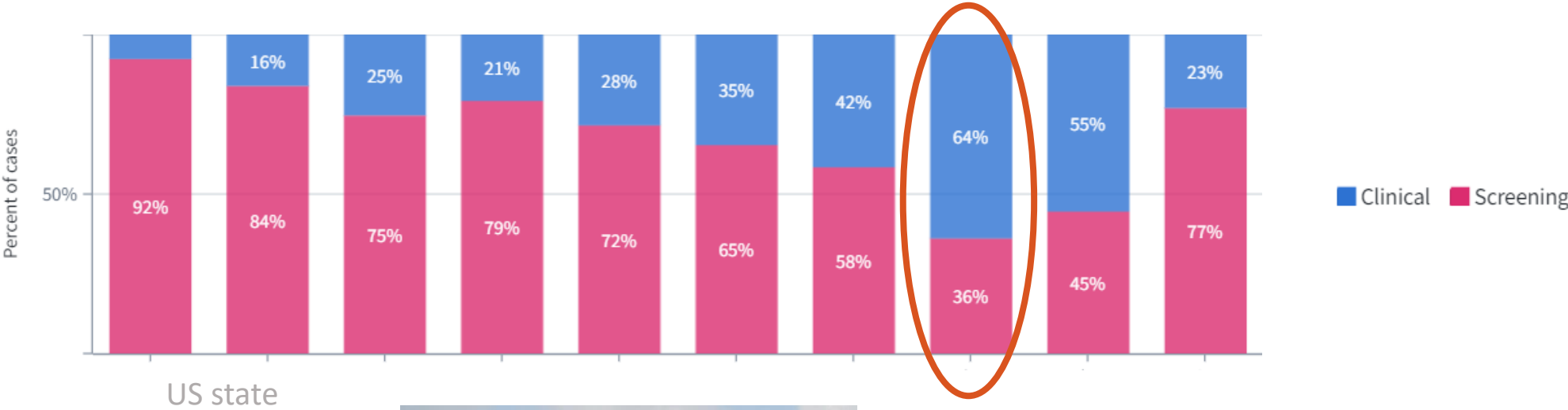
Screening at 2 nearby long-term care facilities found multiple cases, even though the case had no epidemiology links to these facilities



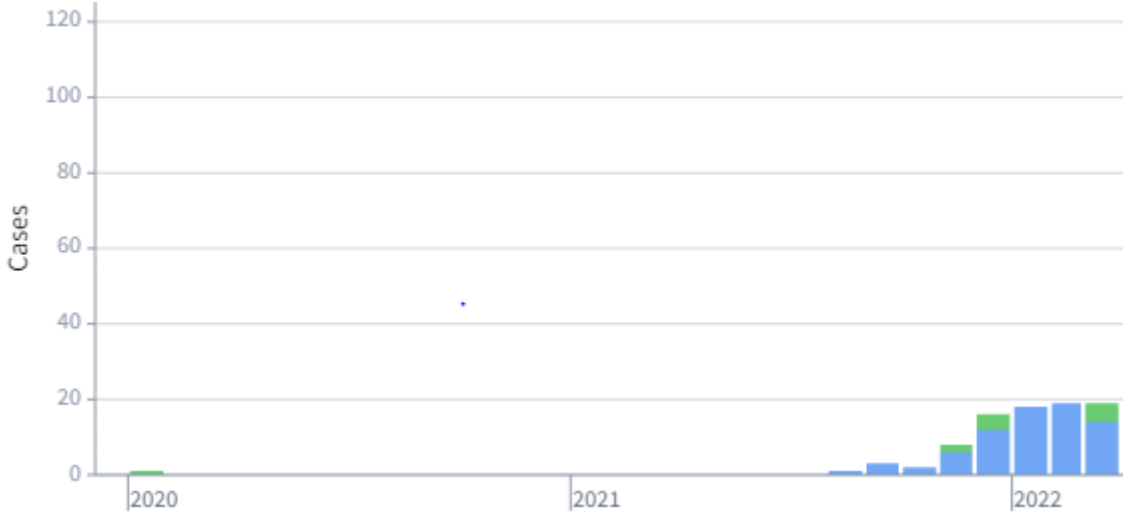
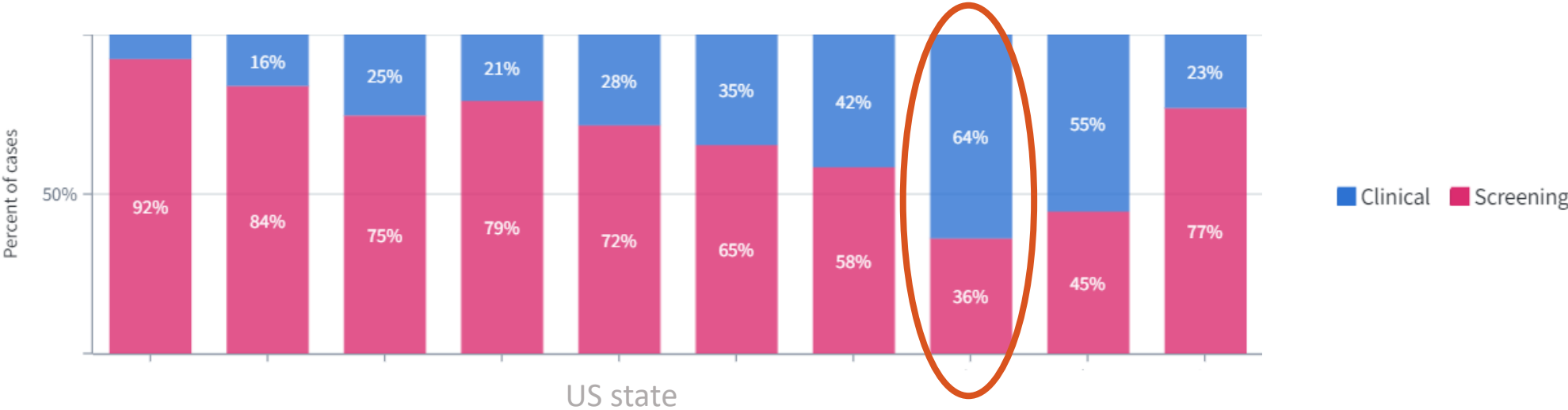
High proportion of clinical cases suggests under-detection of screening cases



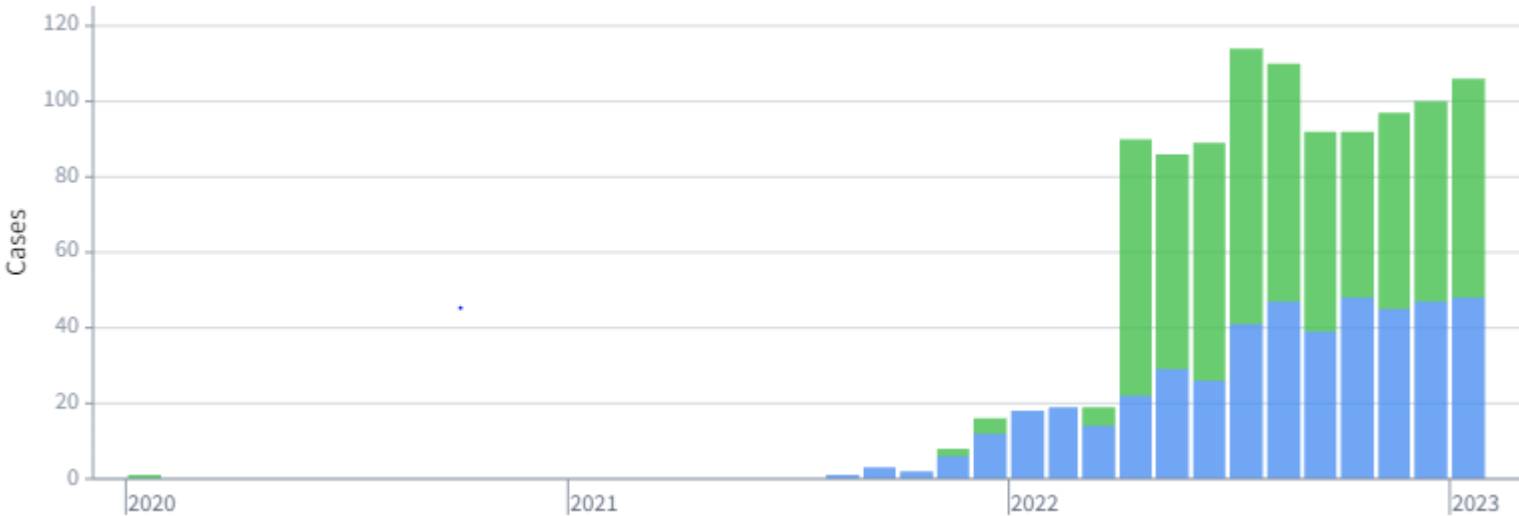
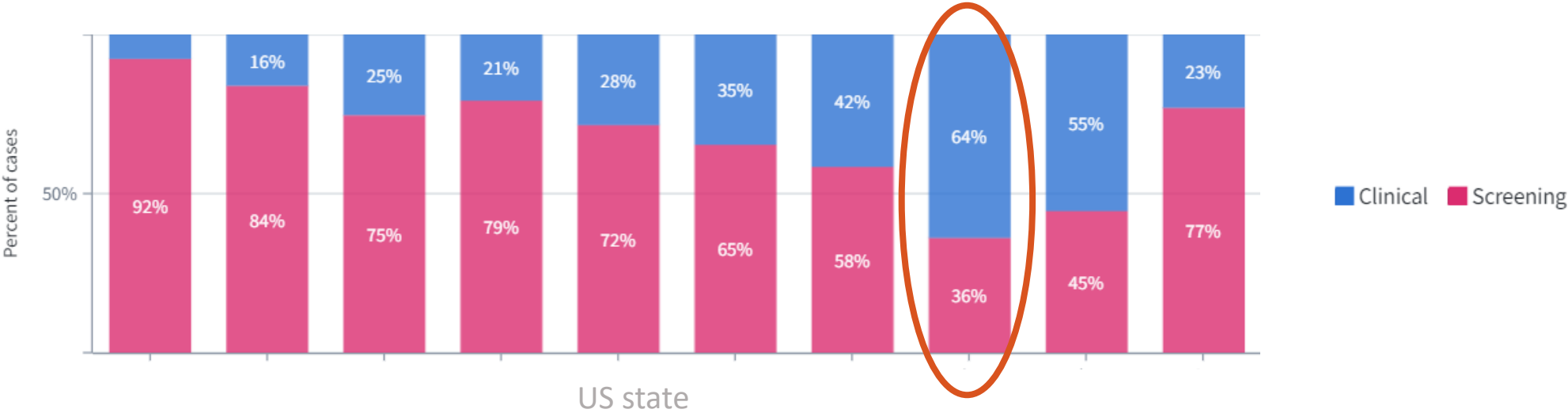
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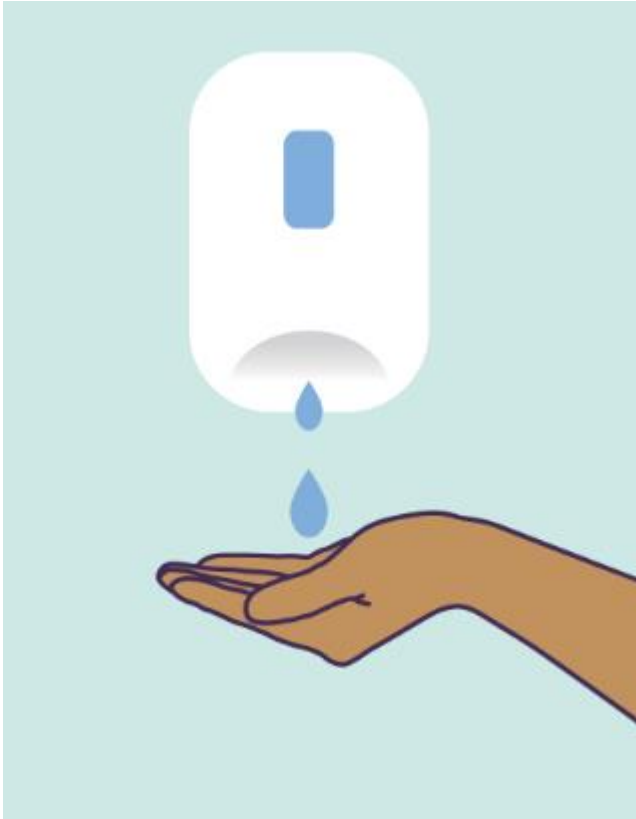
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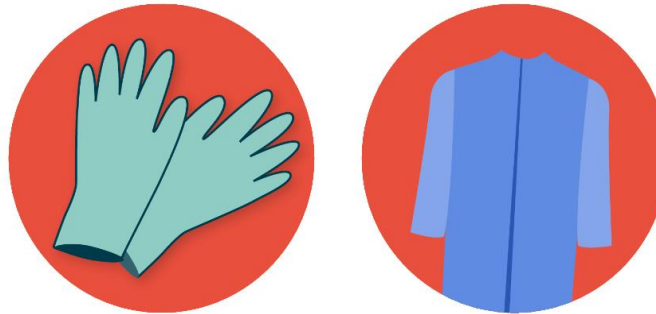
High proportion of clinical cases suggests under-detection of screening cases



Prevention strategies: Back to the basics



Hand Hygiene



Transmission-based precautions & Personal Protective Equipment



Environmental Cleaning & Disinfection

***C. auris* Specific Cleaning and Disinfection Products**

- **Some common healthcare disinfectants don't work against *C. auris***
 - **Particularly quaternary ammonium compounds**
- **First choice:**
 - **List P: Antimicrobial Products Registered with EPA for Claims Against *Candida auris***

<https://www.epa.gov/pesticide-registration/list-p-antimicrobial-products-registered-epa-claims-against-candida-auris>

Don't wait until you have a case!

**Strengthen IPC and consider using disinfectants
effective against *Candida auris*
...even in facilities/units without cases**



Communication at time of Transfer

Inter-facility Infection Control Transfer Form

This form must be filled out for transfer to accepting facility with information communicated prior to or with transfer.

Please attach copies of latest culture reports with susceptibilities if available.

Sending Healthcare Facility:

Patient/Resident Last Name	First Name	Date of Birth	Medical Record Number
		/ /	

Name/Address of Sending Facility	Sending Unit	Sending Facility Phone

Sending Facility Contacts	Contact Name	Phone	E-mail
Transferring RN/Unit			
Transferring physician			
Case Manager/Admin/SW			
Infection Preventionist			

Does the person* currently have an infection, colonization OR a history of positive culture of a multidrug-resistant organism (MDRO) or other potentially transmissible infectious organism?	Colonization or history Check if YES	Active infection on Treatment Check if YES
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)		
Vancomycin-resistant <i>Enterococcus</i> (VRE)		
<i>Clostridioides difficile</i>		
<i>Acinetobacter</i> , multidrug-resistant		
Enterobacteriaceae (e.g., <i>E. coli</i> , <i>Klebsiella</i> , <i>Proteus</i>) producing-Extended Spectrum Beta-Lactamase (ESBL)		
Carbapenem-resistant Enterobacteriaceae (CRE)		
Other, specify (e.g., lice, scabies, norovirus, influenza):		

Does the person* currently have any of the following? (Check here if none apply)

Cough or requires suctioning

Central line/PICC (Approx. date inserted __/__/__)

...

...

Thank you!

<https://www.cdc.gov/fungal/candida-auris>

Candidaauris@cdc.gov

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

